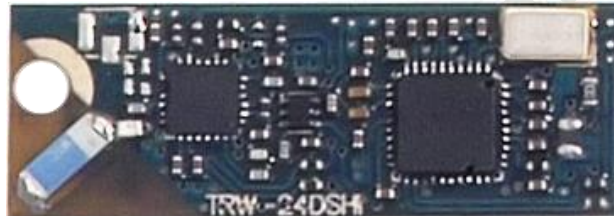

2.4GHz Direct Sequence Spread Spectrum Hi Power Module



Version History

Version	Date	Changes
V1.00	May 23, 2009	1 st . Edition
V2.00	Dec. 21, 2009	2 nd . Edition
V2.01	Jan.7, 2010	3 rd . Edition
V2.02	Jan.11,2010	4 th . Edition

Product Profile

This module can apply to wireless data two-way transmission. Frequency is 2.4GHz and takes Direct Sequence Spread Spectrum. Strong anti-interference, especially, it is less vulnerable to the wireless LAN, Bluetooth receiver, Wireless Network, Wifi, microwave ovens and so on.

TRW-24DSHI two-way transceiver module is taking Direct Sequence Spread Spectrum (DSSS). You can get the highest reliability and high data rate performance by using variable phase modulation such as PSK, QPSK(Quadrature Phase Shift Keying)、DQPSK(Differential Quadrature Phase Shift Keying) and so on. Advantage is it still can keep good communication during existing 2.4GHz wireless network in high-interference environment.

Direct Sequence Spread Spectrum(DSSS) provides the maximum data transfer rate is 250Kbps, maximum transmitter power is +20dBm, working voltage is 4.5V~5.5V. Build-in UART Micro-controller interface. It can apply to various data transmission, short distance handheld device and corresponding application, such as wireless mouse, wireless keyboard, wireless remote controller, home automatically control, wireless toy and so on.

Application

- Wireless Keyboard and Mouse
- Remote Control
- VOIP Phone
- AMR – Automatic Meter Reading
- Wireless Game Pad
- Wireless Toys
- Home Automation
- RKE – Two-way Remote Keyless Entry

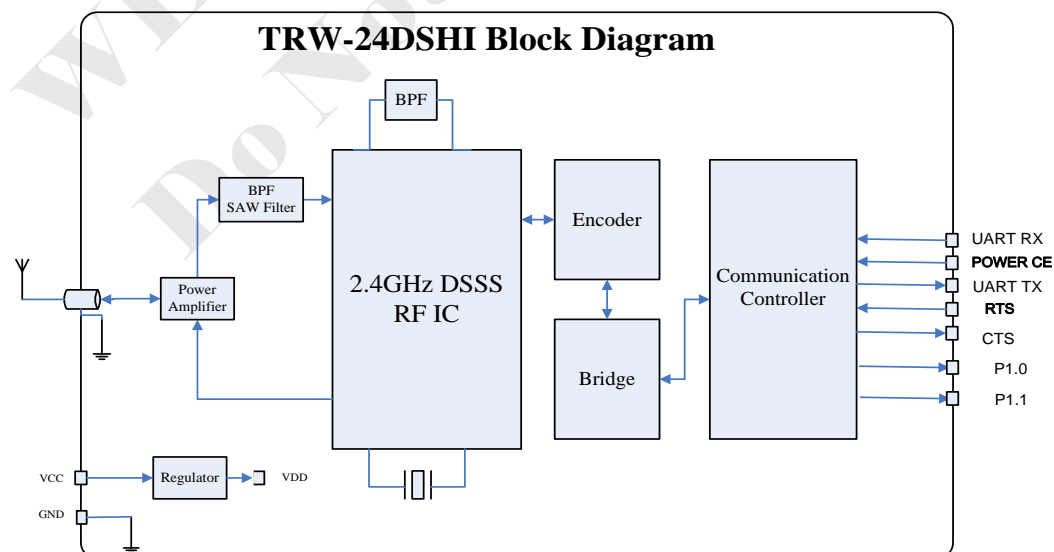
Key Feature

- 2.4GHz Sequence Spread Spectrum
- RF Output Power up to +20dBm
- Receive Sensitivity up to -98dBm
- Voltage Supply from 4.3V~5.5V
- Distance range up to 500m (Open Space)
- DSSS Data rate up to 250KBps
- Auto transaction sequencer no need MCU
- Dynamic data rate reception
- UART Micro-controller Interface (TTL 3V3)

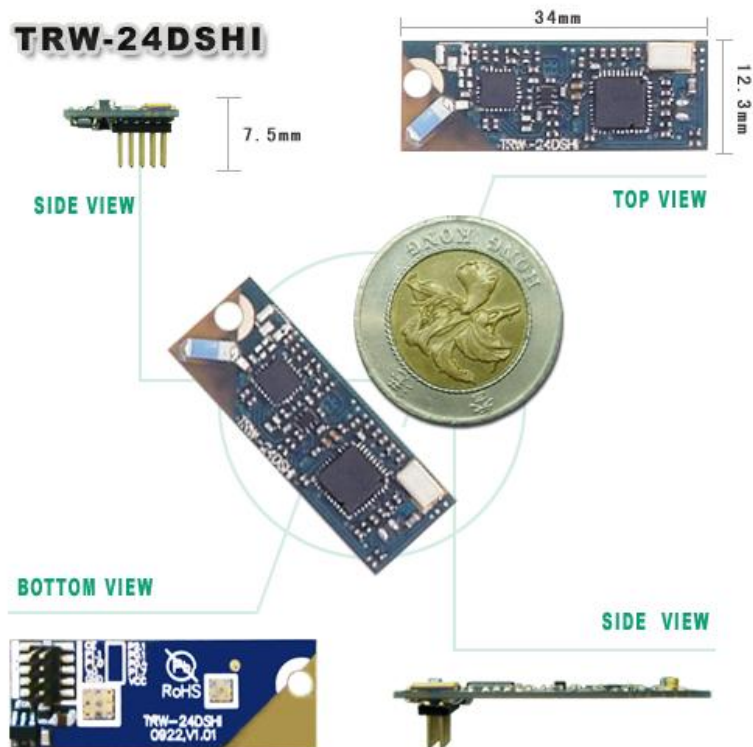
Characteristic

Parameter	Min	Type	Max	Unit	Condition
Operating Condition					
Operating temperature range	-10		+70	°C	
Storage temperature range	-40		+90	°C	
Operating supply voltage	4.3		5.5	V	
Current Consumption					
Rx mode			43	mA	
Tx mode			210	mA	Peak current
Sleep mode			5	µA	
RF Characteristic					
Frequency range	2401		2483	MHz	
Frequency deviation	270		330	KHz	
Data rate	31.25		1000	Kbps	
Tx Output power		+19	+20	dBm	
Rx sensitivity			-98	dBm	
Link Turnaround Time	30		65	µs	
Modulation	DSSS				

Block Diagram



View



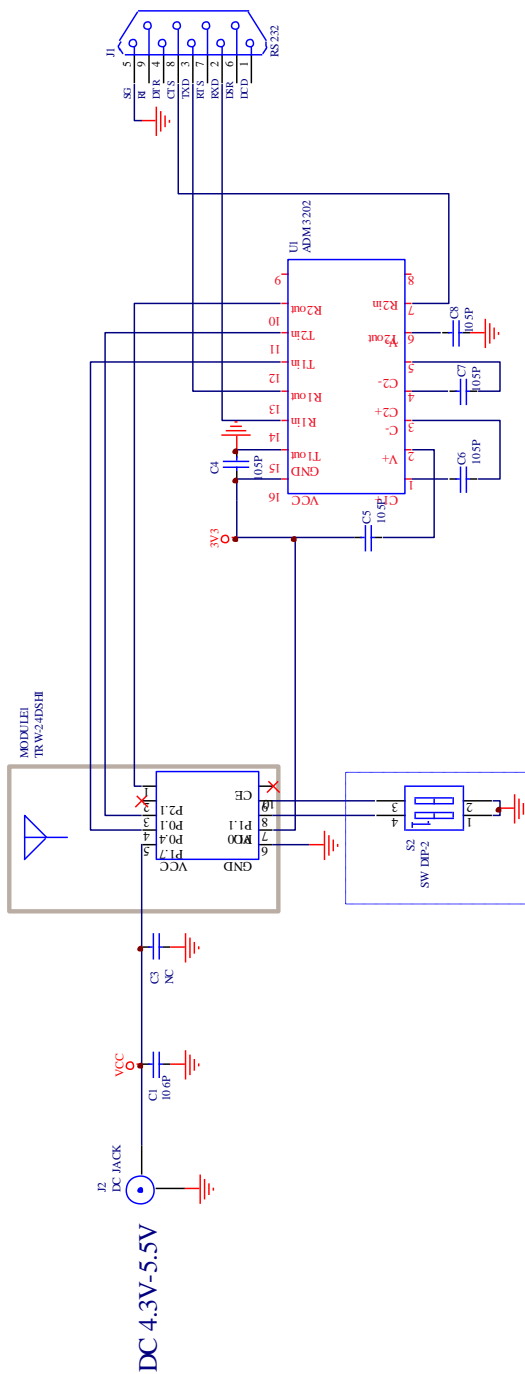
Pin Assignment



Pin	Function	I/O	Description
1	P2.1	O	CTS
2	NC	X	NC
3	P0.4	O	UART TX
4	P1.7	I	UART RX
5	VCC	P	Power Cathode
6	GND	G	Power Negative
7	VO	O	3.3V Output
8	P1.0	O	UART Data Rate Select
9	P1.1	O	UART Data Rate Select
10	CN	X	NC

Application Circuit

TRW-24DSHI to RS232 Demo Circuit



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Title	Document Number		
Size	A4	Rev	Rev
Date	21/12/2009	Sheet:	of

Interface Data Rate Select

P1.1	P1.0	Data Rate
0	0	4.8K
0	1	9.6K
1	0	19.2K
1	1	19.2K

Command Summary

1. Interface rate selection

When module and device interface rate are the same, it will sustained response 0xFE 0xFE 0xFE 0xFE data and will stop response until module complete configure.

2. Configuration module

0xFE+1Byte(Channel)+ 1Byte(RF rate)+ 1Byte(RF power)+ 1Byte (High byte GID code)+

1 Byte(Low byte GID code)

➤ Channel: 0x01(2400MHz) ~ 0x53(2483MHz), 1MHz for every channel interval.

➤ RF rate:

Value	RF Data Rate	Modulation Mode
00	1M	GFSK
01	250K	32 Chip 8DR
02	125K	64 Chip 8DR
03	62.5K	32 Chip DDR
04	31.25K	64 Chip DDR

- In GFSK mode , data is transmitted at 1Mbps , without any DSSS
- In 8DR mode , 1Byte is encoded in each PN code symbol transmitted
- In DDR mode , 2bits are encoded in each PN code symbol transmitted
- In SDR mode , a single bit is encoded in each PN code symbol transmitted

➤ RF power :

Value(Hex)	00	01	02	03	04	05	06	07
Power(dBm)	-14	-8	-2	+4	+9	+16	+18.5	+20

➤ Group ID(GID) :

Two Bytes are available for user setting.

Set 0000, it is broadcast mode and all devices can receive if the channels are the same.

3. Read internal setting

Value= 0x7E

Send back value=0x7E+1Byte(Channel)+ 1Byte(RF rate)+1Byte(RF power)
+1Byte(High byte GID code)+1Byte (Low byte GID code)

4. Transmission data

0xFD+data(it must be less than 62Bytes)

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